Mark Gibson
Harlow.

(6)

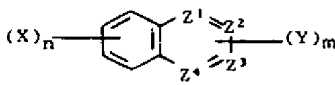---

90-364868/49   AB9 E13 L03 V07   **JAPS 07.12.89**
JAPAN SYNTHETIC RUBBER   *JO 2262-627-A
  08.12.88-JP-308825 (+JP-316597) *(25.10.90)* C07d-215/18
  C07d-237/28 C07d-239/74 C07d-241/44 C07d-401/04 G02f-01/35
Organic nonlinear optical element · comprises e.g. substd.
quinoline derivs., useful as wavelength converting element
  C90-158646

A(8-M9C, 9-A2) E(6-D2, 6-D3, 6-D6) L(3-D1D)

An organic nonlinear optical element comprises a cpd. of formula (I):

(X)$_n$ — [benzene ring] — (Y)$_m$ (I)

Z^1, Z^2, Z^3 and Z^4 = one or two = N and others are carbon atom or -CH-:
X and Y = electron attractive group such as -NO$_2$, -CN, -COR^1, -SO$_2$R^1, -SOR^1, -CF$_3$, -CCl$_3$, -COOR^1 or halogen atom (R^1 = H, alkyl, alkenyl, alkynyl, aryl, alkoxy or aryloxy group) or electron donating group such as -R^1, -NH$_2$, -NHCOCH$_3$,

-N(R^2)$_2$, -N◯A, -NHNH$_2$ or -OR^z (R^2 = H, alkyl or aryl group, and -N◯A = cyclic amino group);
n = 1-4; and
m = 1-3.

USE/ADVANTAGE
The nonlinear optical element is useful as wave length converting element and has comparable SHG characteristics with those of urea and is stable at room temp. and easily obtained as single crystals.

PREPARATION
(I), e.g. substituted quinoline derivatives can be synthesized by treating aniline having substituent with α,β-unsatd. carbonyl cpd., treating o-aminobenzaldehydes with aldehyde or ketone or introducing directly substituent into quinoline skeleton of quinoline cpd.
Single crystal of the cpd. (I) can be obtained by e.g. cooling-, slow evaporation-, recrystallisation-, sublimation- or zone melting method.
The nonlinear optical element can be made by e.g. dispersing fine crystals of the cpd. into high polymer matrix
J02262627-A+

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or by aligning the molecules dispersed in high polymer matrix by applying an external electric field.

POLYMER MATERIAL
The high polymer matrix is of e.g. polymethyl (meth)-acrylate or polystyrene.(7ppW50RBHDwgNo0/0).

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